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In co-operation with the

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PULPWOOD CONSUMPTION
AND
WOOD PULP PRODUCTION
1918

By

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FOREST SERVICE

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By FRANKLIN H. SMITH, *Statistician in Forest Products*

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INTRODUCTION

Detailed statistics on pulpwood consumption and wood pulp production in the United States during 1918 are contained in this bulletin. Directly comparable data are given in the bulletins for 1917 and 1916. Statistics have been published by the Forest Service for 1905, by the Forest Service in co-operation with the Bureau of the Census for the period 1906-1911, and by the Bureau of the Census, in connection with the census of manufactures, for 1914.

The co-operation of the News Print Service Bureau in the collection and compilation of the statistics was continued in 1918 as in former years.

The completeness and heartiness of the support of the industry in furnishing reports is evidenced by the fact that an estimate had to be made for but one firm in the entire country.

Note.—Acknowledgment is made for assistance in the collection and compilation of the statistics and in the review of the report to R. S. Kellogg, Secretary of the News Print Service Bureau, and Albert H. Pierson, of the Forest Service.

PULPWOOD CONSUMPTION AND WOOD PULP PRODUCTION, 1918

The consumption of pulpwood by 250 establishments in 1918 was 5,250,794 cords.* The total includes an estimated utilization of 218,000 cords by one establishment in New Hampshire. The 1918 figures show a decrease in consumption of 4 per cent in comparison with 1917, and an increase of less than 1 per cent over 1916.

Wood pulp production aggregated 3,313,861 tons, a decrease in production of 6 per cent from 1917 and 4 per cent from 1916. The quantity shown includes an estimate of 140,000 tons for one establishment in New Hampshire. Of the total quantity of pulp manufactured in 1918, 41 per cent (1,364,504 tons) was made by the mechanical process, 44 per cent (1,456,633 tons) by the sulphite process, 11 per cent (350,362 tons) by the soda process, and 4 per cent (142,362 tons) by the sulphate process. The quantity of mechanical pulp produced was 11 per cent and that of soda pulp 20 per cent under that of 1917. The output of sulphite pulp was approximately 1 per cent and that of sulphate pulp 68 per cent more than for the year before.

*Cord = 128 cubic feet

Operating conditions in the industry for the first ten months of the year were largely of the restrictive character of those prevailing in 1917. Difficulty was experienced in getting adequate stocks of pulpwood and in transporting it, in securing supplies of necessary materials, because of diversion or scarcity in the movement of incoming and outgoing freight, and, particularly, in the matter of labor. These conditions were all incident to the war activities of the country. The demand for pulp continued undiminished during the year and, outside of the ordinary channels of consumption, further utilization of pulp took place for strictly war purposes. Imports of wood pulp were approximately 100,000 tons less than for either one of the two preceding years.

PULPWOOD CONSUMPTION

Statistics on the consumption of pulpwood, by kinds of wood, for four calendar years, 1909, 1916, 1917, and 1918, are presented in Table 1. Consumption was slightly less than in 1917 as a result, in part, of the nonoperation of several mills. Total importations of spruce and poplar varied little from the figures for other years, and the relative importance of the various species utilized remained practically unchanged. The increased use of hardwoods—beech, birch, maple, and chestnut—shown in 1917 over 1916 was still further added to in 1918.

In Maine, New York, Pennsylvania, and New Hampshire, four of the five States leading in the quantity of pulpwood consumed, the figures for 1918 show a decline from the preceding year, ranging from 5 per cent in New York to 17 per cent in New Hampshire. (See Table 5.) In Wisconsin, the remaining one of the five leading States, the increase amounted to about 7 per cent. In all of the other States for which figures are shown separately, with the exception of Michigan and North Carolina, decreased use is evident.

ANNUAL WOOD CONSUMPTION AND COST

Consumption figures on pulpwood, together with the total annual cost, are shown in Table 2 for those years of the period 1899 to 1918 for which statistics are available.

The story of the almost uninterrupted growth of the industry is told in the tabulation. The average cost per cord figures out \$4.95 for 1899, \$8.62 for 1909, and \$13.93 for 1918—and these mounting costs are of much significance in connection with the economics of the industry.

CONSUMPTION OF WOOD BY SPECIES AND STATES

Detailed figures on the consumption of pulpwood, by species, for the several States are contained in Table 3. It is not permissible to print the figures for certain states other than in group form because the operations of individual firms would thus be revealed. Spruce forms 55 per

cent, hemlock 16 per cent, balsam fir 7 per cent, and poplar 6 per cent—a total of 84 per cent—of all the wood used. The relation of each of the woods quoted to the aggregate consumed differs little from that in the immediately preceding years.

The reported use of slabs and other mill waste declined from 233,982 cords in 1917 to 154,603 cords in 1918.

It may be assumed that an increased utilization of some of the minor species, where they are available, will naturally follow the upward trend of pulpwood values.

CONSUMPTION OF WOOD BY PROCESSES OF MANUFACTURE

Pulpwood consumption by kinds of wood entering into the several processes of manufacture is detailed in Table 4. Of the 5,250,794 cords going into the making of pulp, 25 per cent was utilized in the production of ground wood pulp, 55 per cent in sulphite, 14 per cent in soda, and 6 per cent in sulphate. The conifers enter largely into the production of mechanical and sulphite pulps, while the bulk of the wood used in both soda and sulphate processes is hardwood.

AVERAGE AND TOTAL COSTS OF WOOD

In Table 5 are given by States comparative figures for 1909 and 1916 to 1918, inclusive, on the number of establishments reporting, the quantity, average cost and total cost f. o. b. mill, and the number of tons of wood pulp produced. The figures for 1916, 1917, and 1918 are directly comparable, having been gathered by one agency under similar conditions; the data for 1909 were provided to permit of a ready comprehension of the changes since that period.

The reports for 1918 are for 250 establishments as against 246 in 1917 and 235 in 1916. In 1909, 253 establishments operated. Comparative figures indicate that the number of new mills put in operation during the last few years has not offset those which have shut down permanently.

Attention is directed to the increase in the average cost per cord of wood, as shown in Table 5, as between 1916 and 1918. In 1917 the average cost jumped from the 1916 average of \$8.76 to \$11.10, or 27 per cent. An advance of \$2.83—from \$11.10 to \$13.93, or 25 per cent—took place from 1917 to 1918. Wood costs, in other words, have gone up nearly 60 per cent in the last three years. Emphasis is laid upon the fact that the average cost per cord is computed from the figures reported by mills operating under conditions both general and peculiar to themselves and which preclude their costs' being directly comparable. This fact should be considered in using the average cost per cord in any computation or deduction. The increase in cost per cord over 1917 amounted to 37 per cent in Maine, 24 per cent in New York, 13 per cent in Wisconsin, 38 per cent in Pennsylvania, and 31 per cent in New Hampshire.

RANGE OF PULPWOOD PRICES

A more comprehensive presentation of pulpwood costs is made in Table 6, wherein is shown the range in price, number of mills, and form in which purchased—whether rough, peeled, or rossed, or in the form of slabs and other waste. For the bulk of the rough wood approximately \$11 to \$12 was paid; for peeled wood, \$15 to \$16; for rossed wood, \$20 to \$21; and for slabs, \$8 to \$9 per cord. Table 6 shows pulpwood costs ranging between \$3 and \$31 per cord, which emphasizes the fact that a great diversity exists in operating factors.

QUANTITY AND COST OF WOOD BY CONDITION

Of the aggregate quantity of wood consumed by the mills, 47 per cent was bought in the rough, 46 per cent peeled, and 7 per cent rossed. These figures are given in Table 7 by States. The average cost per cord reported for rough wood was \$11.78. The added preparation given the wood adds to its value, so that for peeled wood the average cost was \$15.18, and for rossed wood \$20.07.

CONDITION OF WOOD BY SPECIES

In Table 8 are shown the same data as given in Table 7, arranged by species instead of States. Of the domestic spruce 50 per cent is delivered in the rough and 42 per cent peeled; of the imported spruce 29 per cent is rough, 49 per cent peeled and 22 per cent rossed. In hemlock 73 per cent is rough and 27 per cent peeled, and in balsam fir 41 per cent is rough, 44 per cent peeled, and 15 per cent rossed. With the exception of tamarack, all of which is rough, the minor species are principally peeled.

WOOD PULP PRODUCTION

Figures are given in Table 9 on wood pulp production in as much detail as is practicable without revealing the operations of individual mills. The reported aggregate output was 3,313,861 tons,* of which 41 per cent was mechanical, 44 per cent sulphite, 11 per cent soda, and 4 per cent sulphate. The 1918 output of pulp was 4 per cent less than that in 1917. The production of ground wood pulp was 11 per cent and that of soda pulp 20 per cent under that of 1917. Sulphate pulp production was greater by 68 per cent and that of sulphite by less than 1 per cent than in 1917. The increased sulphate production was not confined to any one State, but was a general condition participated in by practically all of the mills turning out sulphate. Of the mechanical pulp manufactured 90 per cent was not steamed and 10 per cent was steamed. Of

*Short ton=2,000 pounds.

the sulphite pulp, 62 per cent was unbleached and 38 per cent bleached; in soda pulp 8 per cent was unbleached and 92 per cent bleached; in sulphate pulp 87 per cent was unbleached and 13 per cent bleached.

Maine, New York, Wisconsin, New Hampshire, and Pennsylvania are the leading States in pulp production in the order given. In the five States named 76 per cent of the country's total output of wood pulp was manufactured in 1918.

In but two of the larger States did the production of pulp exceed that of 1917—Wisconsin with a 4 per cent and Michigan with a 15 per cent increase. The increase among the States grouped as "all other" amounted to 12 per cent. The losses in production range from 3 per cent in Maine to 21 per cent in the northwest group of States—California, Oregon, and Washington. The decrease in volume in New Hampshire was 11 per cent, Vermont 12 per cent, West Virginia 13 per cent, Minnesota 14 per cent, and North Carolina 17 per cent.

The average value f. o. b. mill for all wood pulp produced is \$52.68 per ton, an increase of \$9.35 per ton, or 22 per cent over 1917. The average figure was computed from reports covering the production of approximately 90 per cent of the aggregate output for the year. The value of mechanical pulp given is 17 per cent, sulphite pulp 21 per cent, soda pulp 18 per cent, and sulphate pulp 43 per cent above that reported for 1917.

PULP PRODUCTION FOR TWO DECADES

Table 10 has been added to this year's bulletin in order that the production of wood pulp for such years as statistics are available may be shown. Pulp manufacture increased 80 per cent in the 10-year period 1899-1908, and 33 per cent in the 10-year period 1909-1918.

IMPORTS AND EXPORTS OF PULPWOOD, WOOD PULP AND PAPER

Tables 11 to 15, inclusive, are transcripts of statistics compiled by the Department of Commerce and are of importance in connection with this report because of their showing of the annual imports of pulpwood, and the imports and exports of wood pulp and paper. Revised classifications effected during the periods covered by the tables account for the omissions and regroupings.

IMPORTS OF PULPWOOD

The annual imports of pulpwood for the last 9 years are shown in Table 11. The imports for 1918 were larger than for any other one of the years shown, and were 33 per cent in excess of the 1917 imports. The quantities given do not correspond with the figures in preceding tables of this report showing the volume of imported woods consumed; the Forest Service data are for spruce and poplar alone and the quantity

of other species which are imported is not recorded. Much wood is carried over in storage from year to year, so that further discrepancies may occur. The average value per cord advanced \$1.45, 17 per cent, to \$9.75 in 1918, adding nearly \$5,000,000 to the cost of pulpwood for the year. Practically all of the pulpwood is imported from Canada.

IMPORTS OF WOOD PULP

The aggregate imports of wood pulp in 1918 were smaller than in either 1917 or 1916—the decrease as between 1918 and 1917 amounting to 15 per cent. (See Table 12.) The decline in imports was due principally to the lessened quantity of ground wood pulp brought in; in 1917 the imports were 249,172 tons, compared with 165,605 tons in 1918.

The average value of imports per ton was \$60.97, a drop of \$8.39, or 12 per cent, from the previous year. The average value is practically double that of the pre-war period.

EXPORTS OF WOOD PULP

Wood pulp exports slumped nearly 15,000 tons, or 42 per cent, below the 1917 record, and the quantity more nearly approaches the normal figures for before the war. (See Table 13.) The average value per ton for all exports was \$85.91, representing a difference of \$13.37, or 13 per cent, below the year before.

IMPORTS OF NEWS PRINT AND OTHER PAPER

A substantial gain of approximately 74,000,000 pounds or 7 per cent, took place in news print paper imports in 1918 over the preceding year. (See Table 14.) The increase in 1917 over 1916 was 19 per cent. In 9 years, 1910 to 1918, imports have gone from 113,000,000 pounds to 1,193,000,000 pounds. The average value per pound of imported news print advanced from 2.76 cents to 2.94 cents. The quantity of all other printing paper imported was 182,995 pounds; in 1917 the imports were 412,091 pounds. Imports of wrapping paper increased 19 per cent. The value of all other paper imported decreased 30 per cent.

EXPORTS OF NEWS PRINT AND OTHER PAPER

Exports of all kinds of paper were larger in 1918 than during the year before. (See Table 15.) The exports of news print were 193,479,180 pounds, 3 per cent more than for 1917. The average value per pound of the news print exported is 4.13 cents. The quantity of all other printing paper exported was 99,218,916 pounds, an increase of 5 per cent over 1917; the exports of wrapping paper were 59,899,043 pounds, an increase of 14 per cent. The value of all other paper exported was more by 23 per cent than the year before.

TABLE 1.—*Pulpwood consumption: Quantity of wood consumed by kinds, with per cent of distribution, 1909, 1916, 1917, and 1918.*

Kind of wood	(1) 1918		(1) 1917		(1) 1916		(2) 1909	
	Quantity	Per cent distribution	Quantity	Per cent distribution	Quantity	Per cent distribution	Quantity	Per cent distribution
Total.....	Cords 5,250,794	100.0	Cords 5,480,075	100.0	Cords 5,228,558	100.0	Cords 4,001,607	100.0
Spruce:								
Domestic.....	2,204,143	42.0	2,385,966	43.5	2,399,933	45.9	1,653,249	41.3
Imported.....	666,164	12.7	681,450	12.4	701,667	13.4	768,332	19.2
Hemlock.....	836,406	15.9	775,003	14.1	760,226	14.6	559,657	14.0
Balsam Fir.....	368,117	7.0	382,036	7.0	301,032	5.8	95,366	2.4
Poplar:								
Domestic.....	210,849	4.0	313,955	5.7	329,370	6.3	302,876	7.6
Imported.....	78,354	1.5	92,298	1.7	82,326	1.6	25,622	.6
Jack Pines.....	152,124	2.9	75,382	1.4	80,068	1.5	(3)	.....
Yellow Pine.....	133,774	2.5	142,094	2.6	90,310	1.7	90,885	2.3
Yellow poplar.....	61,247	1.2	41,155	.7	37,974	.7	(4)	.....
Tamarack.....	52,031	1.0	58,732	1.1	33,271	.6	(5)	.....
Gum.....	47,145	.9	32,513	.6	37,391	.7	(5)	.....
White fir.....	35,119	.7	33,181	.6	49,425	1.0	37,176	.9
Cottonwood.....	18,685	.4	32,993	.6	22,211	.4	36,898	.9
Basswood.....	12,110	.2	3,807	.1	11,481	.2	(5)	.....
White pine.....	10,183	.2	3,562	.1	2,545	(6)	(5)	.....
Beechbirch, maple and chestnut (8).. All other species....	202,930 6,810	3.9 .1	183,317 8,649	3.3 .2	(7)77,762 10,662	1.5 .2	(5) 182,569	..... 4.6
Slabs and other mill waste.....	154,603	2.9	233,982	4.3	200,844	3.9	248,977	6.2

(1) Forest Service figures.

(2) Bureau of the Census and Forest Service figures.

(3) Included in "yellow pine."

(4) Included in "domestic poplar" previous to 1916.

(5) Included in "all other species."

(6) Less than one-tenth of 1 per cent.

(7) Not including "chestnut."

(8) Mills keep no separate record of beech, birch, and maple.

TABLE 2.—*Annual consumption of pulpwood and total cost for specified years.*

Year.	Consumption Cords.	Total Cost.
1918.....	5,250,794	\$73,167,118
1917.....	5,480,075	60,815,057
1916.....	5,228,558	(1) 45,785,682
1914.....	4,470,763	39,408,453
1911.....	4,328,052	.....
1910.....	4,094,306	.....
1909.....	4,001,607	34,477,540
1908.....	3,346,953	28,047,473
1907.....	3,962,660	32,360,276
1906.....	3,661,176	26,411,887
1905.....	3,192,123	17,735,665
1899.....	1,986,310	9,837,516

(1) Not including cost of "slabs and other mill waste" in Louisiana, Massachusetts, North Carolina, and Virginia.

TABLE 3.—*Pulpwood consumption: Quantity of wood consumed, by kinds and States, 1918*

State.	Num- ber of estab- lish- ments.	Total.	Spruce.		Hem- lock.	Balsam fir.	Poplar.		Jack pines.	Yellow pine.	Yellow poplar.	Tama- rack.	Gum.	White fir.	Cotton- wood.	Bass- wood.	White pine.	Beech, birch, maple, and chest- nut.	All other.	Slabs and other mill waste.
			Do- mestie.	Im- ported.			Do- mestie.	Im- ported.												
United States...	250	Cords. 5,250,794	Cords. 2,204,143	Cords. 666,164	Cords. 836,406	Cords. 368,117	Cords. 210,849	Cords. 78,354	Cords. 152,124	Cords. 133,774	Cords. 61,247	Cords. 52,031	Cords. 47,145	Cords. 35,119	Cords. 18,685	Cords. 12,110	Cords. 10,183	Cords. 202,930	Cords. 6,810	Cords. 154,603
Maine.....	33	1,234,969	799,649	136,487	18,482	89,234	136,591	20,230								1,017	454	5,343		27,482
New York.....	75	1,003,742	428,284	328,185	68,408	69,055	48,847	51,776								8,922				265
Wisconsin.....	46	860,857	230,557	32,153	472,310	65,207	2,576		25,045			27,164					172			5,673
Pennsylvania....	14	383,699	36,851	89,854	5,151	7,000	8,851	5,400	92,867	7,104			19,492			171		77,049		33,909
New Hampshire.	11	345,272	185,334	55,119	436	101,804	538													2,041
Michigan.....	12	203,516	72,332	10,783	54,521	23,373	1,270		881			10,322					8,637			21,397
Minnesota.....	6	182,002	167,457									14,545								
Virginia.....	7	129,637	60,197		17,840				1,488	17,341	32,771									
West Virginia...	5	109,885	60,290		27,933				620		665		28				920			19,429
Vermont.....	9	99,687	75,563	11,704		11,304	838	278												
California, Oregon and Washington...	9	239,774	35,385		145,583									35,119	16,107				6,810	770
All other states(I)	23	457,754	52,244	1,879	25,742	1,140	11,338	670	31,223	109,329	27,811		27,625		2,578	2,000		120,538		43,637

(I) Includes Delaware, District of Columbia, Georgia, Louisiana, Maryland Massachusetts, Mississippi, North Carolina, Ohio, South Carolina, Tennessee and Texas.

TABLE 4.—*Pulpwood consumption: Quantity of wood consumed, by kinds and processes of manufacture, 1918.*

Kind of Wood.	Aggregate quantity.	Reduced by—			
		Mechanical process.	Sulphite process.	Soda process.	Sulphate process.
Total.....	Cords. 5,250,794	Cords. 1,345,435	Cords. 2,860,172	Cords. 748,638	Cords. 296,549
Spruce:					
Domestic.....	2,204,143	911,483	1,250,909	5,612	36,139
Imported.....	666,164	232,914	426,114	5,792	1,344
Hemlock.....	836,406	51,803	745,640	1,134	37,829
Balsam fir.....	368,117	80,016	245,904	7,753	34,444
Poplar:					
Domestic.....	210,849	19,124	37,072	154,653	.....
Imported.....	78,354	6,468	8,099	63,787	.....
Jack pines.....	152,124	17,487	.....	124,090	10,547
Yellow pine.....	133,774	7,662	3,576	31,546	90,990
Yellow poplar.....	61,247	665	.....	60,582	.....
Tamarack.....	52,031	728	6,438	.....	44,865
Gum.....	47,145	28	.....	47,117	.....
White fir.....	35,119	7,506	27,613	.....	.....
Cottonwood.....	18,685	.....	72	18,613	.....
Basswood.....	12,110	21	.....	12,089	.....
White pine.....	10,183	1,546	.....	.....	8,637
Beech, birch, maple, and chestnut.....	202,930	.....	1,000	201,930	.....
All other species.....	6,810	.....	.....	6,810	.....
Slabs, and other mill waste.....	154,603	7,984	107,735	7,130	31,754

TABLE 5.—*Pulpwood consumption: Number of mills, quantity and cost of wood consumed with average cost per cord and quantity of wood pulp produced by States, 1909, 1916 1917, and 1918.*

State.	Wood consumed.					Wood pulp produced.
	Year.	Estab-lish-ments (number)	Quantity.	Average cost per cord (f.o.b. mill).	Total cost.	
			(Cords.)			(Tons.)
United States.....	1918	250	5,250,794	\$13.93	\$73,167,118	3,313,861
	1917	246	5,480,075	11.10	60,815,057	3,509,939
	1916	235	5,228,558	8.76	(1)45,785,682	3,435,001
	1909	253	4,001,607	8.62	34,477,540	2,491,406
Maine.....	1918	33	1,234,969	15.57	19,226,644	872,779
	1917	33	1,309,239	11.31	14,813,387	898,798
	1916	32	1,198,753	9.09	10,891,247	852,276
	1909	37	903,962	9.15	8,267,958	603,852
New York.....	1918	75	1,003,742	17.89	17,954,934	749,176
	1917	79	1,056,556	14.45	15,270,142	798,616
	1916	75	1,094,513	11.05	12,098,608	787,397
	1909	90	921,882	10.45	9,630,575	686,323
Wisconsin.....	1918	46	860,857	9.93	8,551,564	473,890
	1917	43	805,490	8.79	7,083,173	456,129
	1916	43	743,595	7.70	5,729,044	451,651
	1909	37	576,019	7.46	4,294,229	324,509

(1) Not including cost of "Slabs and other mill waste" in Louisiana, Massachusetts, North Carolina and Virginia.

TABLE 5.—*Pulpwood consumption: Number of mills, quantity and cost of wood consumed, with average cost per cord and quantity of wood pulp produced by States, 1909, 1916, 1917, and 1918.*

State.	Wood consumed.					Wood Pulp Produced
	Year.	Estab-lish-ments (number)	Quantity.	Average cost per cord (f.o.b. mill).	cost.	
Pennsylvania.....	1918	14	383,699	15.48	5,941,382	195,451
	1917	14	415,776	11.23	4,669,165	215,060
	1916	13	423,843	8.74	3,706,081	216,964
	1909	15	295,038	7.25	2,139,087	135,525
New Hampshire.....	1918	11	345,272	18.10	6,248,764	229,774
	1917	11	416,553	13.78	5,738,883	257,645
	1916	11	471,041	9.81	4,623,146	341,365
	1909	11	349,997	9.36	3,276,620	212,599
Michigan.....	1918	12	203,516	10.57	2,150,354	101,036
	1917	11	187,117	9.30	1,740,580	96,623
	1916	10	186,993	7.50	1,402,245	99,601
	1909	8	132,846	6.29	835,861	64,369
North Carolina.....	1918	3	186,168	8.07	1,502,762	54,169
	1917	3	175,433	8.05	1,412,940	64,548
	1916	3	85,709	5.16	(²) 266,207	35,348
	1909	4	145,090	6.34	919,733	53,926
Minnesota.....	1918	6	182,002	11.79	2,145,170	121,444
	1917	6	205,026	11.31	2,319,833	140,353
	1916	5	205,433	7.34	1,507,233	138,799
	1909	7	47,373	7.02	332,548	37,295
Virginia.....	1918	7	129,637	12.43	1,611,874	69,895
	1917	7	141,579	10.31	1,459,061	75,972
	1916	6	132,736	8.46	(²) 1,036,116	68,595
	1909	6	92,039	8.40	772,963	48,641
West Virginia.....	1918	5	109,885	11.22	1,233,252	48,261
	1917	5	119,918	8.61	1,032,045	54,813
	1916	5	127,478	6.42	818,983	58,913
	1909	5	109,166	5.43	582,985	48,797
Vermont.....	1918	9	99,687	15.47	1,542,652	83,548
	1917	10	109,616	12.33	1,351,825	94,975
	1916	10	87,675	9.43	826,904	73,813
	1909	11	70,977	10.18	722,777	59,356
Massachusetts.....	1918	4	45,754	17.53	792,263	30,674
	1917	4	55,897	12.58	703,369	30,802
	1916	3	27,640	9.91	(²) 271,978	19,247
	1909	5	45,899	8.80	403,778	25,804
California, Oregon and Wash- ton.....	1918	9	239,774	8.95	2,146,678	168,654
	1917	8	262,294	6.43	1,687,670	213,813
	1916	8	259,544	5.67	1,472,736	188,782
	1909	8	155,843	7.52	1,172,556	110,371
All other States.....	(³) 1918	16	225,832	9.38	2,118,825	115,110
	(³) 1917	12	219,581	6.98	1,532,984	102,792
	(⁴) 1916	11	183,605	6.18	(⁵) 1,135,154	102,250
	(⁶) 1909	9	155,476	6.86	1,125,870	80,039

(¹) Not including cost of "Slabs and other mill waste" in Louisiana, Massachusetts, North Carolina, and Virginia.

(²) Not including cost of "Slabs and other mill waste."

(³) Includes Delaware, District of Columbia, Georgia, Louisiana, Maryland, Mississippi, Ohio, South Carolina, Tennessee, and Texas.

(⁴) Includes Delaware, Georgia, Louisiana, Maryland, Mississippi, Ohio, South Carolina, and Texas.

(⁵) Not including cost of "Slabs and other mill waste" in Louisiana.

(⁶) Includes Delaware, Maryland, Ohio, South Carolina, and Texas.

TABLE 6.—*Prices paid for pulpwood, number of mills, and form in which purchased.*

Range of price per cord (f. o. b. mill).	Rough.	Peeled.	Rossed.	Slabs and other mill waste.
		Number	of mills.	
\$1.00-\$1.99.....	..	..	..	1
3.00- 3.99.....	2	..	..	..
4.00- 4.99.....	2	..	..	4
5.00- 5.99.....	7	1	..	2
6.00- 6.99.....	17	5	..	3
7.00- 7.99.....	28	4	..	1
8.00- 8.99.....	41	3	..	7
9.00- 9.99.....	27	9	..	2
10.00-10.99.....	15	5	..	2
11.00-11.99.....	22	11	1	..
12.00-12.99.....	29	17	..	..
13.00-13.99.....	13	18	1	..
14.00-14.99.....	29	24	1	..
15.00-15.99.....	21	22	1	1
16.00-16.99.....	14	29	2	3
17.00-17.99.....	22	34	4	..
18.00-18.99.....	17	22	4	..
19.00-19.99.....	4	30	6	..
20.00-20.99.....	1	23	6	..
21.00-21.99.....	..	14	8	..
22.00-22.99.....	2	6	20	..
23.00-23.99.....	1	2	4	..
24.00-24.99.....	..	3	9	..
25.00-25.99.....	..	1	5	..
27.00-27.99.....	..	..	1	..
30.00-30.99.....	..	..	2	..

TABLE 7.—Pulpwood consumption; Quantity, average cost per cord, and total cost of wood consumed according to condition, by States, 1918.

State.	Total.			Rough.			Peeled.			Rosed.		
	Quantity.	Average cost per cord (f.o.b. mill).	Total cost.	Quantity.	Average cost per cord (f.o.b. mill).	Total cost.	Quantity.	Average cost per cord (f.o.b. mill).	Total cost.	Quantity.	Average cost per cord (f.o.b. mill).	Total cost.
United States.....	Cords. 5,250,794	\$13.93	\$72,167,118	Cords. 2,467,745	\$11.78	\$29,066,390	Cords. 2,402,393	\$15.18	\$36,462,219	Cords. 380,656	\$20.07	\$7,638,509
Maine.....	1,234,969	15.57	19,226,644	443,852	15.24	6,762,927	707,829	15.26	10,801,885	83,288	19.95	1,661,832
New York.....	1,003,742	17.89	17,954,934	231,526	17.38	4,023,682	653,741	17.58	11,490,208	118,475	20.60	2,441,044
Wisconsin.....	860,857	9.93	8,551,564	776,110	9.91	7,690,461	75,893	9.71	737,147	8,854	14.00	123,956
Pennsylvania.....	383,699	15.48	5,941,382	73,860	13.10	967,379	283,405	15.69	4,447,434	26,434	19.92	526,569
New Hampshire.....	345,272	18.10	6,248,764	56,653	16.03	908,304	155,145	17.18	2,665,860	133,474	20.04	2,674,600
Michigan.....	203,516	10.57	2,150,354	161,136	11.15	1,797,466	40,674	8.02	326,018	1,706	15.75	26,870
Minnesota.....	182,002	11.79	2,145,170	182,002	11.79	2,145,170	.....	.....	.....	.....	.....	.....
Virginia.....	129,637	12.43	1,611,874	6,318	9.17	57,942	123,319	12.60	1,553,932	.....	.....	.....
West Virginia.....	109,885	11.22	1,233,252	52,902	10.32	545,763	56,983	12.06	687,489	.....	.....	.....
Vermont.....	99,687	15.47	1,542,652	53,276	13.86	738,255	43,278	17.00	735,586	3,133	21.96	68,811
California, Oregon and Washington.....	239,774	8.95	2,146,678	184,577	8.56	1,580,279	55,197	10.26	566,399	.....	.....	.....
All other States ⁽¹⁾	457,754	9.64	4,473,850	245,533	7.53	1,848,762	206,929	11.84	2,450,261	5,292	21.70	114,827

⁽¹⁾ Includes Delaware, District of Columbia, Georgia, Louisiana, Maryland, Mississippi, North Carolina, Ohio, South Carolina, Tennessee, and Texas.

TABLE 8.—Pulpwood consumption; Quantity, average cost per cord, and total cost of wood consumed, according to condition, by kinds of woods, 1918.

State.	Total.			Rough.			Peeled.			Rosed.		
	Quantity.	Average cost per cord (f.o.b. mill).	Total cost.	Quantity.	Average cost per cord (f.o.b. mill).	Total cost.	Quantity.	Average cost per cord (f.o.b. mill).	Total cost.	Quantity.	Average cost per cord (f.o.b. mill).	Total cost.
	Cords.			Cords.			Cords.			Cords.		
Total.....	5,250,794	\$13.93	\$73,167,118	2,467,745	\$11.78	\$29,066,390	2,402,393	\$15.18	\$36,462,219	380,656	\$20.07	\$7,638,509
Spruce, domestic.....	2,204,143	15.38	33,909,319	1,103,818	14.11	15,571,969	926,422	16.27	15,068,965	173,903	18.79	3,268,385
Spruce, imported.....	666,164	19.25	12,822,654	190,822	17.16	3,273,776	328,151	19.20	6,299,353	147,191	22.08	3,249,525
Hemlock.....	836,406	9.50	7,944,832	608,355	8.68	5,279,872	228,051	11.69	2,664,960			
Balsam fir.....	368,117	15.42	5,674,914	152,300	11.49	1,750,311	161,701	17.73	2,867,199	54,116	19.54	1,057,404
Poplar, domestic.....	210,849	13.67	2,881,591	4,149	7.68	31,853	206,700	13.79	2,849,738			
Poplar, imported.....	78,354	12.87	1,008,444	4,279	16.91	72,351	74,075	12.64	936,093			
Jack pine.....	152,124	13.35	2,030,379	40,222	7.01	282,003	111,902	15.62	1,748,376			
Yellow pine.....	133,774	7.50	1,003,487	49,436	6.76	334,148	84,338	7.94	669,339			
Yellow poplar.....	61,247	10.56	646,481	3,477	8.18	28,457	57,770	10.70	618,024			
Tamarack.....	52,031	9.03	469,796	52,031	9.03	469,796						
Gum.....	47,145	15.85	747,028	28	11.50	322	47,117	15.85	746,706			
White fir.....	35,119	7.85	275,748	34,044	7.91	269,298	1,075	6.00	6,450			
Cottonwood.....	18,685	7.24	135,296	72	3.98	287	13,613	7.25	135,009			
Basswood.....	12,110	13.81	167,233				12,110	13.81	167,233			
White pine.....	10,183	10.51	107,002	9,976	10.50	104,725	207	11.00	2,277			
Beech, birch, maple and chestnut.....	202,930	10.48	2,127,276	110,025	7.71	848,813	92,905	13.76	1,278,463			
All other.....	6,810	7.00	47,670				6,810	7.00	47,670			
Slabs and other mill waste.....	154,603	7.55	1,167,968	104,711	7.15	748,409	44,446	8.02	356,364	5,446	11.60	63,195

TABLE 10.—*Production of wood pulp for specified years, 1899-1918.*

Year.	Total.	Mechanical.	Sulphite.	Soda.	Sulphate.
	Tons.	Tons.	Tons.	Tons.	Tons.
1918.....	3,313,861	1,364,504	1,456,633	350,362	142,362
1917.....	3,509,939	1,535,953	1,451,757	437,430	84,799
1916.....	3,435,001	1,508,139	1,466,402	387,021	73,439
1914 ⁽¹⁾	2,893,150	1,293,661	1,151,327	347,928	52,641
1911.....	2,686,134	.....	.....	.....	.....
1910.....	2,533,976	.....	.....	.....	.....
1909.....	2,495,523	1,179,266	1,017,631	298,626	.....
1908.....	2,118,947	.....	.....	.....	.....
1907.....	2,547,879	.....	.....	.....	.....
1904.....	1,921,768	968,976	756,022	196,770	.....
1899.....	1,179,525	586,374	416,037	177,114	.....

NOTE: Tons = 2000 pounds.
(¹) Reported as screenings, mechanical 11,769, chemical 35,824.

TABLE 11.—*Imports of pulpwood, calendar years, 1910 to 1918.*

Year.	Quantity.				Value (see note).		
	By form.	Cords.	Per cent of form.	Total cords.	Per cord.	Average.	Total.
Total (9 years)	.....	.....	.....	9,264,599	.....	\$7. 25	\$67,207,726
1918.....	.....	.....	100. 0	1,370,027	.....	\$9. 75	\$13,362,566
	Rough.....	276,644	20. 2	.....	\$9. 11	.....	.....
	Peeled.....	964,804	70. 4	.....	9. 63	.....	.....
	Rossed.....	128,579	9. 4	.....	12. 04	.....	.....
1917.....	.....	.....	100. 0	1,031,934	.....	8. 30	8,563,458
	Rough.....	206,081	20. 0	.....	7. 29	.....	.....
	Peeled.....	673,235	65. 2	.....	8. 07	.....	.....
	Rossed.....	152,618	14. 8	.....	10. 73	.....	.....
1916.....	.....	.....	100. 0	1,097,577	.....	6. 56	7,202,570
	Rough.....	190,921	17. 4	.....	5. 93	.....	.....
	Peeled.....	742,337	67. 6	.....	6. 43	.....	.....
	Rossed.....	164,319	15. 0	.....	7. 90	.....	.....
1915.....	.....	.....	100. 0	975,974	.....	6. 43	6,278,948
	Rough.....	258,620	26. 5	.....	5. 82	.....	.....
	Peeled.....	544,139	55. 8	.....	6. 28	.....	.....
	Rossed.....	173,215	17. 7	.....	7. 83	.....	.....
1914.....	.....	.....	100. 0	999,649	.....	6. 78	6,773,198
	Rough.....	198,414	19. 8	.....	6. 04	.....	.....
	Peeled.....	599,299	60. 0	.....	6. 40	.....	.....
	Rossed.....	201,936	20. 2	.....	8. 61	.....	.....
1913.....	.....	.....	100. 0	1,034,885	.....	6. 77	7,007,350
	Rough.....	195,906	18. 9	.....	5. 66	.....	.....
	Peeled.....	581,756	56. 2	.....	6. 47	.....	.....
	Rossed.....	257,223	24. 9	.....	8. 30	.....	.....
1912.....	.....	.....	100. 0	933,565	.....	6. 67	6,227,346
	Rough.....	139,002	14. 9	.....	6. 03	.....	.....
	Peeled.....	528,900	56. 7	.....	6. 06	.....	.....
	Rossed.....	265,663	28. 4	.....	8. 23	.....	.....
1911.....	.....	.....	100. 0	889,257	.....	6. 39	5,682,716
	Rough.....	191,062	21. 5	.....	5. 44	.....	.....
	Peeled.....	473,116	53. 2	.....	5. 98	.....	.....
	Rossed.....	225,079	25. 3	.....	8. 06	.....	.....
1910.....	.....	.....	100. 0	931,731	.....	6. 56	6,109,574
	Rough.....	229,691	24. 7	.....	5. 83	.....	.....
	Peeled.....	459,681	49. 3	.....	6. 28	.....	.....
	Rossed.....	242,359	26. 0	.....	7. 77	.....	.....

NOTE.— The value of merchandise imported is the actual market value or wholesale price thereof at the time of exportation to the United States in the principal markets of the country from which it is exported.

TABLE 12—Imports of Wood Pulp, calendar years 1907 to 1918.

	Aggregate.			Mechanically ground.		Chemical-unbleached.						Chemical-bleached.					
	Quan- tity.	Aver- age value per ton.	Total value.	Quan- tity.	Value.	Unclassified.		Sulphite.		Sulphate.		Unclassified.		Sulphite.		Sulphate.	
						Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
Total (12 years)	(Long tons). 5,579,889	\$39.72	\$221,606,289	(Long tons). 1,940,307	40,170,673	(Long tons). 1,786,427	65,578,721	(Long tons). 601,767	\$47,087,206	(Long tons). 256,786	\$21,114,657	(Long tons). 562,323	\$28,653,439	(Long tons). 68,611	\$7,273,086	(Long tons). 8,925	\$797,713
1918.....	516,258	60.97	31,477,175	165,605	4,720,036	.....	.....	226,298	16,973,540	106,037	7,971,067	.....	.....	14,962	1,512,742	3,356	299,790
1917.....	605,215	69.36	41,979,330	249,172	7,991,368	.....	.....	221,583	19,291,410	96,369	9,993,170	.....	.....	36,640	4,508,368	1,451	195,014
1916.....	610,504	44.20	26,985,693	234,390	4,696,801	(1)120,575	(1)5,255,297	(2)153,886	(2)10,822,256	(2)54,380	(2)3,150,420	(1)26,146	(1)1,506,034	(2)17,009	(2)1,251,976	(2)4,118	(2)302,909
1915.....	507,481	33.36	16,907,026	155,407	2,588,846	287,232	10,954,182	.....	.....	.....	.....	64,842	3,363,998	.....	.....	.....	.....
1914.....	603,183	33.84	20,411,225	193,979	3,246,933	294,884	11,180,232	.....	.....	.....	.....	114,320	5,984,060	.....	.....	.....	.....
1913.....	483,442	32.96	15,935,517	149,901	2,670,781	264,513	9,676,380	.....	.....	.....	.....	69,028	3,588,356	.....	.....	.....	.....
1912.....	482,277	30.90	14,903,218	165,896	3,051,381	247,501	8,477,766	.....	.....	.....	.....	68,880	3,374,071	.....	.....	.....	.....
1911.....	502,165	28.66	14,394,253	234,537	4,221,948	190,394	6,482,360	.....	.....	.....	.....	77,234	3,689,945	.....	.....	.....	.....
1910.....	452,478	29.38	13,296,500	200,164	3,578,316	183,701	6,374,762	.....	.....	.....	.....	68,613	3,343,422	.....	.....	.....	.....
1909.....	328,250	31.42	10,315,089	127,669	2,266,668	144,350	5,189,794	.....	.....	.....	.....	56,240	2,858,627	.....	.....	.....	.....
1908.....	223,647	31.19	6,976,311	(2)63,587	(2)1,137,595	(2)53,277	(2)1,987,948	.....	.....	.....	.....	(2)17,020	(2) 944,926	.....	.....	.....	.....
1907.....	264,980	30.29	8,024,952	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

(1) Jan. 1 to June 30 only.
(2) July 1 to December 31.—In 1908, an additional quantity of wood pulp, not classified as to kind, was imported up to June 30, amounting to 89,763 tons, valued at \$2,905,842.

TABLE 13.—Exports of wood pulp, calendar years, 1908 to 1918.

Year.	Quantity.	Value.	
		Average per ton.	Total.
Total (11 years).....	(Long tons.) 184,600	\$62.52	\$11,541,464
1918.....	20,399	85.81	1,750,377
1917.....	34,982	99.18	3,469,547
1916.....	35,735	59.37	2,121,745
1915.....	18,120	45.26	820,134
1914.....	11,015	43.98	484,477
1913.....	17,657	41.82	738,451
1912.....	(1)12,669	42.86	542,949
1911.....	(1) 8,477	45.62	386,711
1910.....	(1) 7,465	46.12	344,251
1909.....	(1) 7,994	46.13	368,738
1908.....	(1)10,087	50.97	514,084

(1) Quantity, shown in pounds, is reduced in this table to the nearest long ton.

TABLE 14.—Imports of paper, calendar years, 1910 to 1918.

Year	Total value	News-print paper		All other printing paper		Wrapping paper		All other paper
		Quantity	Value	Quantity	Value	Quantity	Value	
		Pounds		Pounds		Pounds		
Total (9 years)...	\$244,533,776	5,450,850,741	\$126,899,166	31,715,498	\$1,987,191	84,996,184	\$5,045,714	\$110,601,705
1918.....	42,753,780	1,192,540,059	35,023,161	182,995	42,633	7,942,134	541,866	7,146,120
1917.....	41,734,084	1,118,225,912	30,929,628	412,091	67,931	6,661,518	456,752	10,279,773
1916.....	28,189,998	936,460,899	18,527,748	1,259,761	119,802	7,103,661	280,952	9,261,496
1915.....	24,465,694	736,817,721	14,138,651	2,395,755	161,703	22,208,212	626,661	9,538,679
1914.....	27,604,771	630,950,295	12,189,792	5,752,447	261,616	41,080,659	1,156,591	13,996,772
1913.....	24,359,827	439,687,195	8,549,062	6,758,490	371,328	.....	735,857	14,703,580
1912.....	18,723,877	171,186,402	3,262,778	5,597,094	292,242	.....	846,500	14,322,357
1911.....	18,112,859	111,660,615	2,096,105	7,376,598	534,250	.....	400,535	15,081,969
1910.....	18,588,886	113,321,643	2,182,241	(1) 1,980,267	(1) 135,686	.....	.....	16,270,959

(1) Figures for period July 1 to December 31.

TABLE 15.—Exports of paper, calendar years, 1910 to 1918.

Year	Total value	News-print paper		All other printing		Wrapping paper		All other paper
		Quantity	Value	Quantity	Value	Quantity	Value	
		Pounds		Pounds		Pounds		
Total (9 years)...	\$261,522,411	1,111,662,699	\$33,735,057	529,667,663	\$34,944,545	268,622,203	\$15,875,862	\$176,966,947
1918.....	54,169,821	193,479,180	7,978,539	99,218,916	8,710,704	59,899,043	4,828,856	32,651,722
1917.....	46,393,655	187,732,739	7,586,374	94,548,586	8,179,868	52,485,911	3,987,239	26,640,174
1916.....	39,576,879	153,472,663	4,126,617	124,145,837	8,069,812	83,673,411	4,025,388	23,355,062
1915.....	22,264,371	110,322,513	2,707,626	44,657,646	2,169,067	36,991,079	1,667,387	15,720,291
1914.....	20,113,942	121,578,332	2,983,344	30,259,588	1,568,960	14,815,496	522,951	15,038,687
1913.....	21,174,217	86,602,057	2,105,984	28,117,371	1,617,285	13,722,414	560,535	16,890,413
1912.....	21,166,566	111,135,997	2,690,225	26,904,552	1,440,992	(1) 7,034,849	(1) 283,506	16,751,843
1911.....	18,702,151	97,841,361	2,357,455	26,429,186	1,278,796	.....	.....	15,065,900
1910.....	17,960,809	(1)49,497,857	(1)1,198,893	55,385,981	1,909,061	.....	.....	14,852,855

(1) Figures for period July 1 to December 31.